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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/12/2005

Dietmar Erich Bernhard Lilie

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07/31/2009

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BANK OF AMERICA PLAZA

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CHARLOTTE, NC 28280-4000

EXAMINER

BOBISH, CHRISTOPHER S

ART UNIT

PAPER NUMBER

3746

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/527,395	<b>Applicant(s)</b> LILIE, DIETMAR ERICH BERNHARD	
	<b>Examiner</b> CHRISTOPHER BOBISH	<b>Art Unit</b> 3746	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8, 11, 12, 15 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11, 12, 15 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/01/2009 has been entered.

### ***Response to Amendment***

The amendment filed on 07/01/2009 under 37 CFR 1.131 has been considered but is ineffective to overcome the Schwartz, Hvilsted, Dolz and David references.

Claims 1, 11 and 15 are amended, claims 1-8, 11-12, 15 and 20 are pending.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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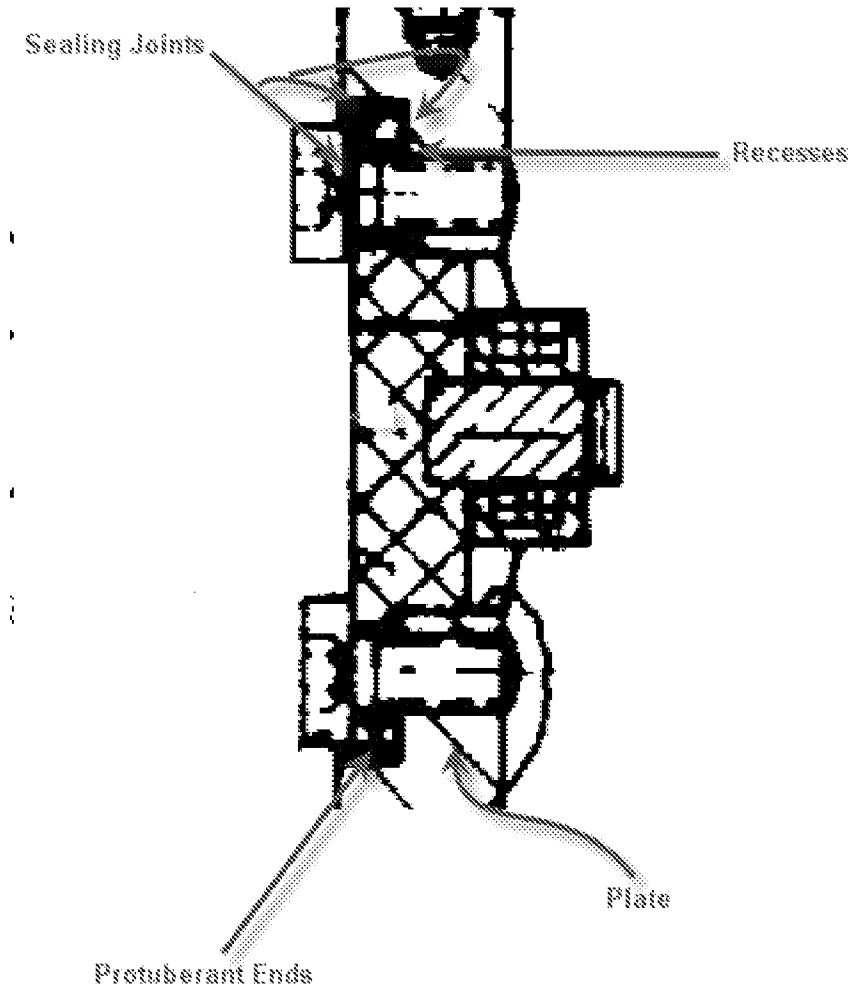
invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dolz (US Patent No. 4,474,537) in view of Hvilsted et al (US Patent No. 4,846,048).

Dolz teaches:

From claim 11:

fluid transfer plate applicable to a fluid pump (**FIG. 4**) comprising: a valve plate (**27**); and a plate (**21**) provided with a through bore (**40**) for association with a protector (**41**) that cooperates with the bore; the protector comprising at least one sensor cavity (**C. 9 Lines 20-21**) configured for receiving an inductive sensor (**43, 44, 45**) therein; and the plate comprising recesses (**screws 42 hold the protector in recesses as can be seen in FIG. 2**) for fixing the protector, the protector comprising protuberant ends (**ends of protector 41 through which screws 42 are fastened**) and being fixed to the plate by means of a sealing joint (**screws 42 create a joint in the recesses holding the protector; i.e. a joint between the walls of the protector and the walls of the pump, or between the screw tops and the protector**), the protuberant ends being associable with the recesses in the plate and the sealing joint; the sealing joint being disposed adjacent the plate (**21**), wherein at least a portion of the protuberant ends are disposed between the recesses in the plate and the sealing joint (**see FIG. 3 below as adapted by the examiner; the joints labeled by the examiner allow for a portion of the protuberant ends to be between said joints and the plate**);



Dolz teaches a piston position sensing sensor, however the location of the sensor is taught as being located on a sidewall and not taught as being on a transfer plate, but Hvilsted teaches a sensor at this location.

Hvilsted teaches:

a sensor assembly that includes an inductive sensor, **FIG. 1 (10), FIG. 2 C. 2 Lines 15-37**, associated with a fluid-transfer plate/valve plate, **FIG. 1 (11)**, a through-bore, **C. 2 Lines 17-19**, for association of a protector, **FIG. 2 (19) C. 2 Lines 38-39**, that cooperates with the bore;

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**It would have been obvious to one having ordinary skill in the art of pumps at the time of the invention to place the sensor at any point in a cylinder in order to measure the position of a piston within the cylinder, Hvilsted C. 1 Lines 15-21, since it has been held that rearranging of parts involves only routine skill in the art. Note that with the combination of Dolz and Hvilsted, the protector taught by Dolz will be located in a valve plate in the manner taught by Hvilsted. Therefore the plate as referenced in the Dolz rejection above would be a valve plate in the combination.**

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarz et al (US Patent No. 6,663,348 B2) in view of Hvilsted et al (US Patent No. 4,846,048) in view of Dolz (US Patent No. 4,474,537).

Schwarz teaches:

From claim 15:

a fluid pump and sensor assembly comprising: a piston, **FIG. 1 (5) C. 4 Line 27**, that is axially displaceable within a cylinder, **FIG. 1 (6) C. 4 Lines 26-28**; the cylinder **(6)** comprising a cylinder closing fluid-transfer plate, **FIG. 1 (~9)**; the piston being displaced towards the fluid-transfer plate and capturing gas or fluid from a low-pressure environment, **C. 4 Lines 26-31**;

Schwarz teaches a piston position sensing sensor, **C. 5 Lines 36-40**, however the location of the sensor is not taught as being on a transfer plate, but Hvilsted teaches a sensor at this location.

Hvilsted teaches:

a sensor assembly that includes an inductive sensor, **FIG. 1 (10), FIG. 2 C. 2 Lines 15-37**, associated with a fluid-transfer plate/valve plate, **FIG. 1 (11)**, a through-bore, **C. 2 Lines 17-19**, for association of a protector, **FIG. 2 (19) C. 2 Lines 38-39**, that cooperates with the bore, the sensor being positioned in contact with a low-pressure environment, **the portion of the sensor inside the**

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**bore is open to low pressure at the side where conductors (18) exit the bore as can be seen from FIG. 1 and FIG. 2;**

**a protector (19) comprising at least one sensor cavity, see FIG. 2 below as adapted by examiner, for associating an inductive sensor;**

**a sensor being installed on a protector, FIG. 2 shows a position sensing device (14, 15, 16, 17, 20), being fixed to the right against a protector (19);**

**It would have been obvious to one having ordinary skill in the art of pumps at the time of the invention to combine the piston sensing device of Hvilsted with the device of Schwarz in order to create a more secure and reliable sensor, C. 3 Lines 8-17 of Hvilsted.**

**It would have been obvious to one having ordinary skill in the art of pumps at the time of the invention to place the sensor at any point in a cylinder in order to measure the position of a piston within the cylinder, Hvilsted C. 1 Lines 15-21, since it has been held that rearranging of parts involves only routine skill in the art.**

Neither Schwartz nor Hvilsted teaches a protector having protuberant ends aligned with an outer surface of a plate, but Dolz does.

Dolz teaches:

From claim 15:

fluid transfer plate applicable to a fluid pump (**FIG. 4**) comprising: a valve plate (**27**); and a plate (**21**) provided with a through bore (**40**) for association with a protector (**41**) that cooperates with the bore; the protector comprising at least one sensor cavity (**C. 9 Lines 20-21**) configured for receiving an inductive sensor (**43, 44, 45**) therein; and the plate comprising recesses (**screws 42 hold the protector in recesses as can be seen in FIG. 2**) for fixing the protector, the protector comprising protuberant ends (**ends of protector 41 through which screws 42 are fastened**) configured such that outer surfaces of the protuberant ends are aligned with an outer surface of the valve plate (**see FIG. 3 which shows protuberant ends and plate 21 being aligned**), wherein at least a portion of the protuberant ends are disposed between the recesses in the plate and a sealing joint (**screws 42 create a joint in the recesses holding the protector; i.e. a joint between the walls of the protector and the walls of the pump, or between the screw tops and the protector; see FIG. 3 above as adapted by the examiner; the joints labeled by the examiner allow for a portion of the protuberant ends to be between said joints and the plate**);

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**It would have been obvious to one having ordinary skill in the art of pumps at the time of the invention to place the sensor at any point in a cylinder in order to measure the position of a piston within the cylinder, Hvilsted C. 1 Lines 15-21, since it has been held that rearranging of parts involves only routine skill in the art. Note that with the combination of Dolz and Hvilsted, the protector taught by Dolz will be located in a valve plate in the manner taught by Hvilsted. Therefore the plate as referenced in the Dolz rejection above would be a valve plate in the combination.**

Claims 1-8, 11, 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarz et al (US Patent No. 6,663,348 B2) in view of Hvilsted et al (US Patent No. 4,846,048) in view of David (US Patent No. 4,662,177) in view of Dolz (US Patent No. 4,474,537).

Schwarz teaches:

From claims 1 and 11:

a fluid pump and sensor assembly comprising: a piston, **FIG. 1 (5) C. 4 Line 27**, that is axially displaceable within a cylinder, **FIG. 1 (6) C. 4 Lines 26-28**; the cylinder **(6)** comprising a cylinder closing fluid-transfer plate, **FIG. 1 (~9)**; the piston being displaced towards the fluid-transfer plate and capturing gas or fluid from a low-pressure environment, **C. 4 Lines 26-31**;

Schwarz teaches a piston position sensing sensor, **C. 5 Lines 36-40**, however the location of the sensor is not taught as being on a transfer plate, but Hvilsted teaches a sensor at this location.

Hvilsted teaches:

a sensor assembly that includes an inductive sensor, **FIG. 1 (10), FIG. 2 C. 2 Lines 15-37**, associated with a fluid-transfer plate/valve plate, **FIG. 1 (11)**, a through-bore, **C. 2 Lines 17-19**, for association of a protector, **FIG. 2 (19) C. 2**



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**Lines 38-39**, that cooperates with the bore, the sensor being positioned in contact with a low-pressure environment, **the portion of the sensor inside the bore is open to low pressure at the side where conductors (18) exit the bore as can be seen from FIG. 1 and FIG. 2;**

**It would have been obvious to one having ordinary skill in the art of pumps at the time of the invention to combine the piston sensing device of Hvilsted with the device of Schwarz in order to create a more secure and reliable sensor, C. 3 Lines 8-17 of Hvilsted.**

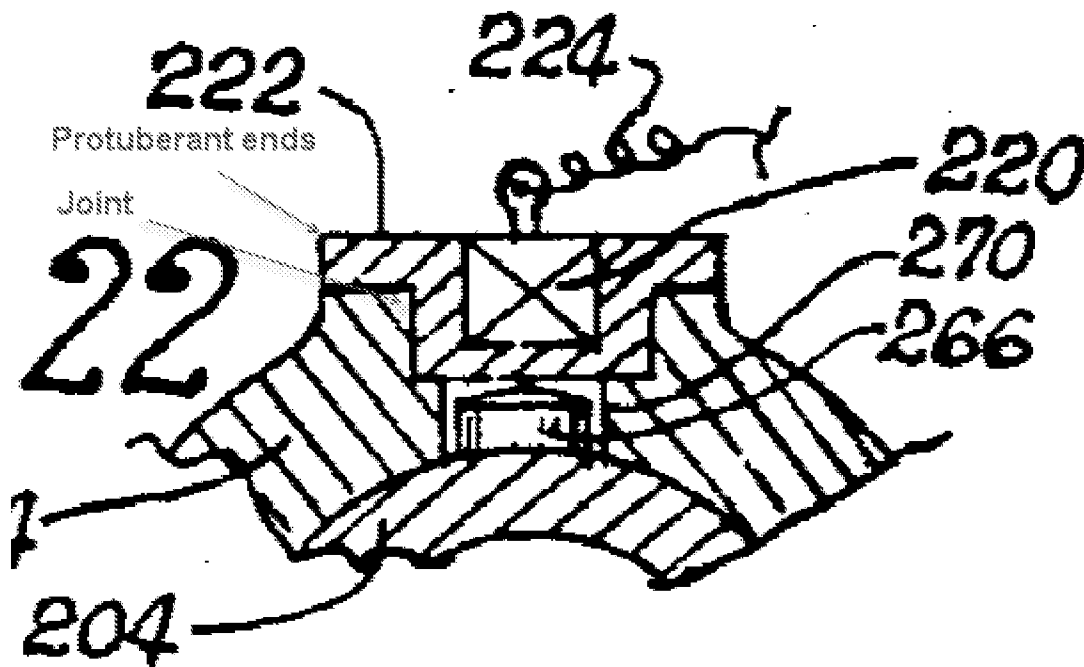
**It would have been obvious to one having ordinary skill in the art of pumps at the time of the invention to place the sensor at any point in a cylinder in order to measure the position of a piston within the cylinder, Hvilsted C. 1 Lines 15-21, since it has been held that rearranging of parts involves only routine skill in the art.**

Neither Schwartz nor Hvilsted teaches a sealing joint provided with the transfer plate, but David does.

David teaches:

a sensor, **FIG. 22 (220) C. 12 Lines 22-23**, and a protector, **FIG. 22 (222) C. 12 Lines 23-25**, comprising protuberant ends, **as seen below in FIG. 22 as adapted by the examiner**, forming a joint;

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It would have been obvious to one having ordinary skill in the art of pumps at the time of the invention to combine the sensor protector taught by David with the pump taught by Schwarz and modified by Hvilsted in order to create a more secure and protected sensor mechanism.

Neither Schwartz nor Hvilsted nor David teaches a protector being between a sealing joint and a plate, but Dolz does.

Dolz teaches:

and a plate (21) provided with a through bore (40) for association with a protector (41) that cooperates with the bore; the protector comprising at least one sensor cavity (C. 9 Lines 20-21) configured for receiving an inductive sensor (43, 44, 45) therein; the protector comprising protuberant ends being fixed to the valve plate by means of a sealing joint (**screws 42 create a joint in the recesses holding the protector; i.e. a joint between the walls of the protector and the walls of the pump, or between the screw tops and the protector**) wherein the protuberant ends are associable with the recesses; the plate further defining a recess in contact with the low-pressure environment (**the recesses are on the outside of the protector**) and extending radially outwardly from the through-bore, and the sealing joint being disposed adjacent a surface of the plate in

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contact with the low-pressure environment **(see FIG. 3 above as adapted by the examiner and addressing the joints adjacent the plate 21)**; and at least a portion of the protector is fixed between the sealing joint and the recess defined in the valve plate **(the protector 41 will be fixed between the screw heads 42 and the plate 21)**;

**It would have been obvious to one having ordinary skill in the art of pumps at the time of the invention to provide the sealing joint means taught by Doze in the pump and sensor assembly taught by Schwartz and modified by Hvilsted and David in order to strengthen the seal by using recesses and screws. Note that with the combination of Dolz and Hvilsted the protector taught by Dolz will be located in a valve plate in the manner taught by Hvilsted. Therefore the plate as referenced in the Dolz rejection above would be a valve plate in the combination.**

Schwartz, Hvilsted, David and Doze disclose and teach of the fluid pump in claim 1.

Dolz further teaches:

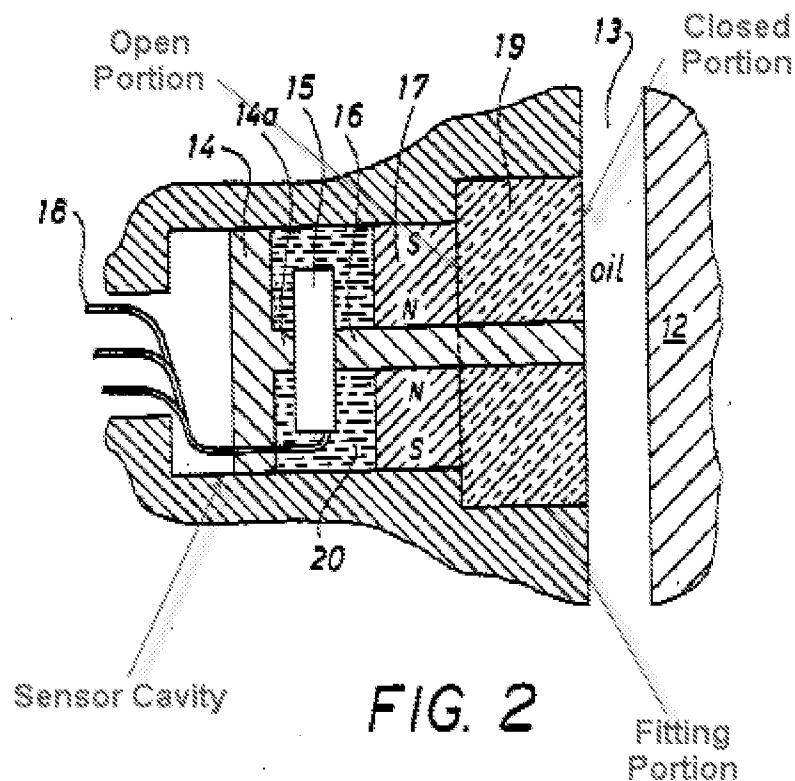
limitations from claim 20, wherein the edges of the sealing joint **(edges where the screw heads for a joint with the plate 21)** are place substantially over the protuberant ends **(the edges rest on top of the protuberant ends of protector 41, as can be seen at the top and bottom of the protector as shown in FIG. 3)**;

Schwartz, Hvilsted, David and Doze disclose and teach of the fluid pump in claim 1.

Hvilsted further teaches:

limitations from claim 2, a protector **(19)** comprising at least one sensor cavity, **see FIG. 2 below as adapted by examiner**, for associating an inductive sensor;

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limitations from claim 3, an inductive sensor emits a magnetic field in the direction of a piston, **FIG. 1 (12), FIG. 3 and FIG. 4 C. 1 Lines 33-58;**

limitations from claims 4 and 12, a protector comprises a fitting portion, an open portion, and a closed portion, the fitting portion being cooperatively associated with a bore, the closed portion aligning with the inner face of a cylinder (11), and the open portion comprising a sensor cavity, **see FIG. 2 above as adapted by the examiner;**

limitations from claim 5, an open portion of a protector (19) is in contact with a low-pressure environment, **the left side of FIG. 2 above near the conductors (18),** and a closed portion is in contact with a high-pressure environment, **the right side of FIG. 2 above where the oil exists and will be compressed;**

Schwarz and Hvilsted teach and disclose of the pump from claims 1-4.

Schwarz further teaches:

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limitations from claim 5, a valve plate, **FIG. 1 (9) C. 4 Line 35**, comprises a suction valve associated with a low-pressure environment and a discharge valve associated with a high-pressure environment, **see FIG. 1 below as adapted by the examiner;**

**When combined, the sensor and protector taught by Hvilsted and the valves taught by Schwarz will be associated with the same high and low pressure environments on either side of a plate (~9).**

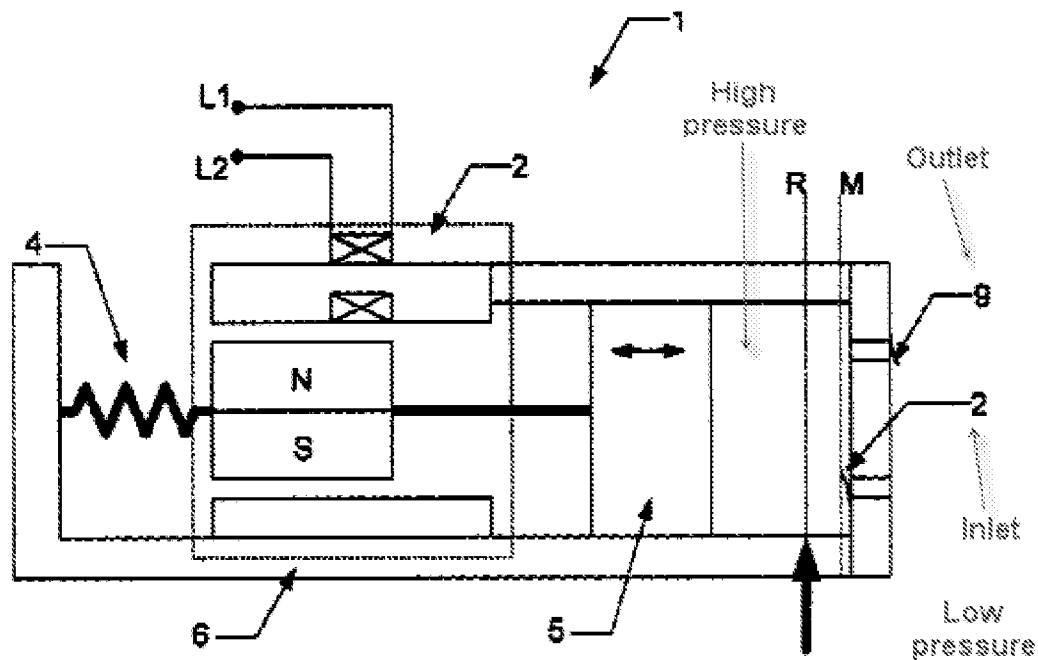


FIG. 1

Schwarz and Hvilsted teach and disclose of the pump from claims 1-5, 11-12 and 15-17.

Hvilsted further teaches:

limitations from claim 6, a protector (19) has substantially the same shape as a cavity, **the cavity shown in FIG. 2 and the protector both appear to have a similar cylindrical shape;**

limitations from claim 7, a protector (19) is built with a material having low magnetic permeability, **C. 2 Lines 38-39 and Line 64;**

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limitations from claim 8, a sensor is fixed to the closed portion of the protector, **FIG. 2 shows a position sensing device (14, 15, 16, 17, 20), being fixed to the right against a protector (19);**

### ***Response to Arguments***

Applicant's arguments filed 07/01/2009 have been fully considered but they are not persuasive.

With respect to the applicant's arguments that the Hvilsted, Dolz, David and Schwartz references do not teach the limitations of claims 1, 11 and 15, specifically with regards to the protector being between a valve plate and a sealing joint, the examiner respectfully disagrees. The limitation of a sealing joint has been considered broadly and thus the contacting surfaces of the protector/screw and the plate of Dolz have been interpreted as sealing joints as in the drawings presented above. The examiner believes that the sealing joints as presented above and the plate 21 of Dolz can be read as having a protector 41 (or protector ends) between them.

The applicant's amendments refer to a gasket in describing the sealing joint, however this limitation is narrower than those of the claim language.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER BOBISH whose telephone number is

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(571)270-5289. The examiner can normally be reached on Monday through Thursday, 7:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571)272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Bobish/  
Examiner, Art Unit 3746

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
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/C. B./  
Examiner, Art Unit 3746